Regularization/GLM (Q6L7) 67% (14/21)

✓ **1. Overdispersion in Poisson Regression occurs when**

A) var(Y|X)>var(Y)
B) var(Y|X)>mean(Y|X)
C) Variance is decreasing
D) I do not know

✓ **2. Which one of these is the measure for goodness of fit for Poisson Regression?**

A) Ordinal R^2
B) Chi-square & Pseudo R^2
C) I do not know
D) There are not measure for it

✓ **3. Which one of these is the correct interpretation of the coefficient of Poisson Regression?**

A) For a 1-unit increase in X, we expect a b1 unit increase in Y.
B) For a 1-unit increase in X, we expect b1 percentage increase in Y.
C) For a 1-percentage increase in X, we expect b1 percentage increase in Y.
D) For a 1-percentage increase in X, we expect b1 unit increase in Y.
E) I do not know

✓ **4. In Poisson regression...**

A) The asymptotic distribution of the maximum likelihood estimates is multivariate normal.
B) The distribution of the maximum likelihood estimates is multivariate normal.
C) The asymptotic distribution of the maximum likelihood estimates is multivariate Poisson distribution.
D) I do not know

✓ **5. Pseudo R-Squared Measures are calculated based on...**

A) The likelihood function
B) Chi-squared value
C) I do not know
D) Overdispersion term

✗ 6. In the case of intercept-only model

(A) The mean of the dependent variable equals the exponential value of intercept

(B) The mean of the dependent variable equals the intercept

(C) The mean of the dependent variable equals 0

(D) I do not know

✗ 7. ln(lambda) = 0.6 - 0.2* female [lamda = the average number of articles] Note: e^(-0.2)=0.78

(A) One unit increase in female brings a 0.2 decrease in ln(lambda).

(B) Being female decreases the average number of articles by 0.78 percent

(C) Being female decreases the average number of articles by 22%

(D) I do not know

✓ 8. While running the Poisson Regression we will have never faced with the value of lambda

(A) 0

(B) 1

(C) 2

(D) I do not know

✗ 9. Why does not quasi-Poisson model have AIC?

(A) Quasi-Poisson is used quasi-likelihood instead of log-likelihood estimates.

(B) Quasi-Poisson does not use iterative estimation

(C) I do not know

✓ 10. Why Poisson regression is called log-linear?

(A) Because we use a log link to estimate the logarithm of the average value of the dependent variable

(B) Because we use a log values of independent variable

(C) Because we use a log value of an independent variable is transformed to linear

(D) I do not know

✗ **11. In the multiple linear regression, we assume that...**

- A The number of observations is much larger than the number of variables (n>>p)
- B The number of observations is slightly larger than the number of variables (n>p)
- C The number of observations equals than the number of variables (n=p)
- D The number of observations is lees than the number of variables (n<p)
- E It is not important
- F I do not know

✓ **12. The way of solving the problem of a large number of variables is...**

- A Subset Selection & Shrinkage (Regularization)
- B Shrinkage (Regularization) & Maximum Likelihood estimation
- C Dimension Reduction & OLS estimation
- D I do not know
- E The absence of the right answer

✓ **13. The bias of an estimator (e.g. z^) equals...Hint: the OLS coefficients are unbias :)**

- A E(z^) - z
- B E(z^2) - [E(z)]^2
- C [E(z^2) - E(z)]^2
- D E(z^2)
- E I do not know

✓ **14. Which of following is not a type of regularization:**

- A L1 - Lasso
- B L2 - Ridge
- C Elastic Net
- D L3 - Passo
- E I do not know

✓ **15. The main idea of regularization is**

- A To introduce a small amount of bias in order to have less variance.
- B To introduce a small amount of variance in order to have less bias.
- C To introduce a small amount of variance and bias in order to have less bias.
- D I do not know

✗ 16. With which function we can show regularization in R

A glmnet()
B regular()
C lm()
D glm()
E I do not know

✗ 17. How the tune of any parametr can be made

A using Cross validation
B It is impossible
C I do not now
D using larger sample
E only having population

✓ 18. Elastic Net is

A the combination of L1 and L2 regularization
B the combination of L2 and L3 regularization
C is independent from other types of refularization
D I do not know
E not a type of regularization

✓ 19. Regularization is used only for

A Poisson Regression
B Linear Regression
C Logistic Regression
D any regression
E I do not know

✗ 20. Regularization can solve the problem of

A heteroscedasticity
B multicollinearity
C autocorrelation
D I do not know

21. Multicollinearity occurs when

A rank(X)<m (m is the number of explanatory variables)

B $var(\varepsilon)=\sigma^2 I$

C $E(\varepsilon)=0$

D $cov(\varepsilon i,\varepsilon j)=const$

E I do not know